WM-A39/B39

SERVICE MANUAL

Photo: WM-A39

US Model
WM-A39

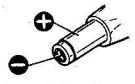
AEP Model
UK Model
WM-B39

SPECIFICATIONS

Frequency response (DOLBY NR off)
40–15,000 Hz
Power output (headphones)
10 mW + 10 mW load impedance
18 ohms at DC operation
Power requirements
3 V DC
Two size AA (R6) batteries
Sony BP-700 rechargeable battery
DC IN 3 V jack accepts:
Sony AC-D2L AC power adaptor for use on 120 V AC, 60 Hz
Battery life — Approx. 7 hours using Sony alkaline batteries AM3 (N)
Dimensions — Approx. 93.1 × 121.3 × 39.1 mm (w/h/d)
incl. projecting parts and controls
Weight — Approx. 230 g incl. batteries
Accessories supplied
Stereo headphones (open-air type, 1)
Belt clip (1)

Optional Accessories
AC power adaptor AC-D2L
Battery case EBP-500B
Car battery cord DCC-70
Battery charger BC-700
Rechargeable battery BP-700

Note: Use only the recommended AC power adaptor or car battery cord manufactured by Sony. Polarity of the plugs of other manufacturers may be different.



Polarity of the Sony plug

Model Name Using Similar Mechanism	WM-F69
Tape Transport Mechanism Type	MF-WMF39-80

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol DD are trademarks of Dolby Laboratories Licensing Corporation.

MICROFILM

CASSETTE PLAYER
SONY®

SERVICING NOTE

Flexible Circuit Board Repairing

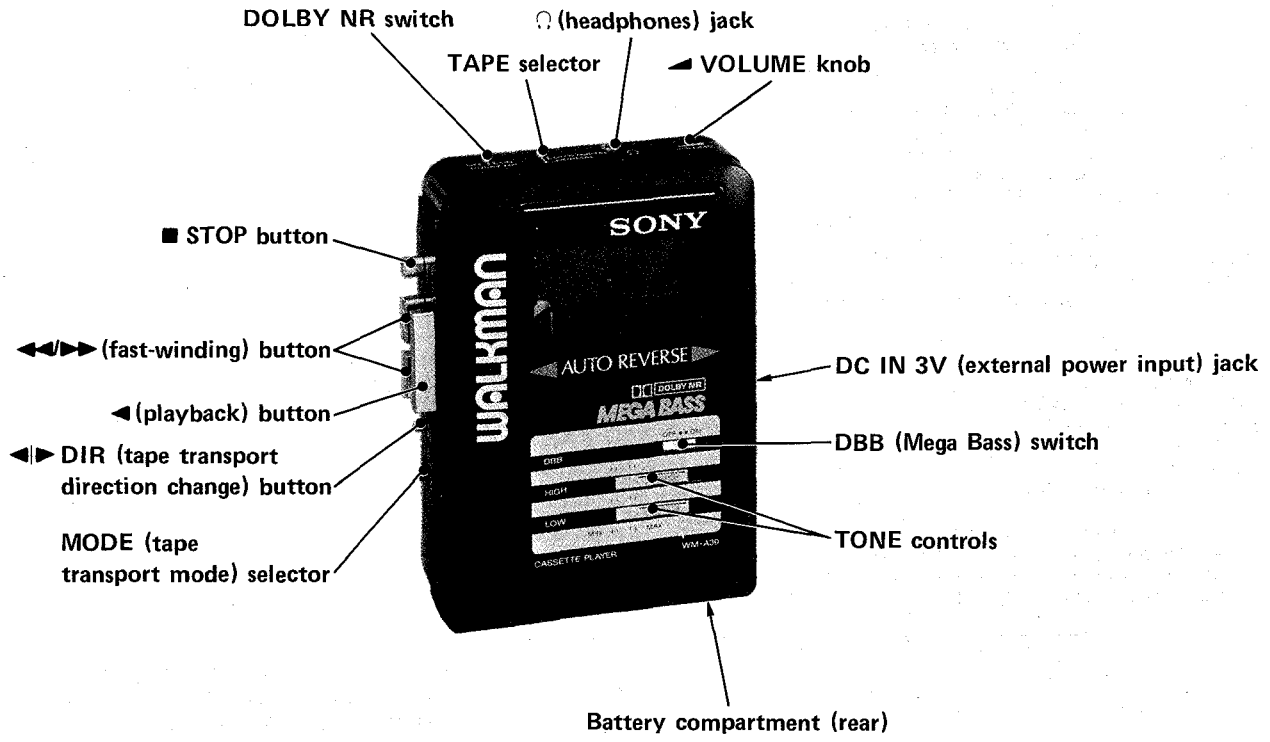
- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SECTION 1
GENERAL

FUNCTION OF CONTROLS

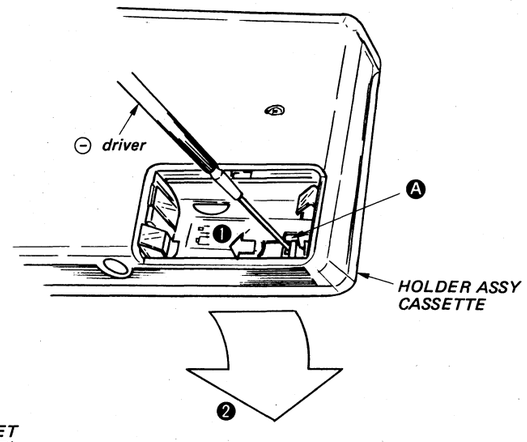


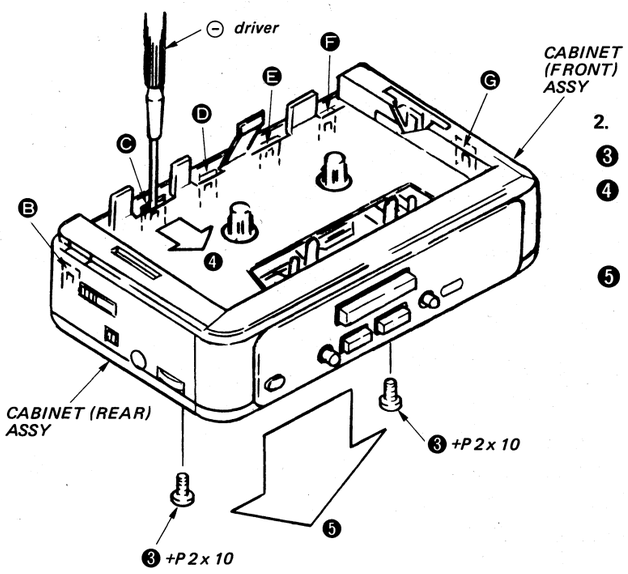
SECTION 2
DISASSEMBLY

1. CASSETTE HOLDER ASSY REMOVAL

❶ Insert a precision driver (–) into the portion Ⓐ inside the battery chamber.

❷ Move the latch in the direction of the arrow ❶ to release it, then pull CASSETTE HOLDER ASSY in the direction of the arrow.





2. CABINET (REAR) ASSY REMOVAL

❸ Remove +P2 × 10 (2 pcs.)

❹ Move claws Ⓑ to Ⓖ with a driver (–) inward of the body to release them.
(at Ⓒ portion move the claw like the arrow ❹)

❺ Remove CABINET (REAR) ASSY in the direction of the arrow.

3. AU BOARD AND MECHA DECK REMOVAL

❻ (AU BOARD) Move the connector housing W301 in the direction of the arrow.

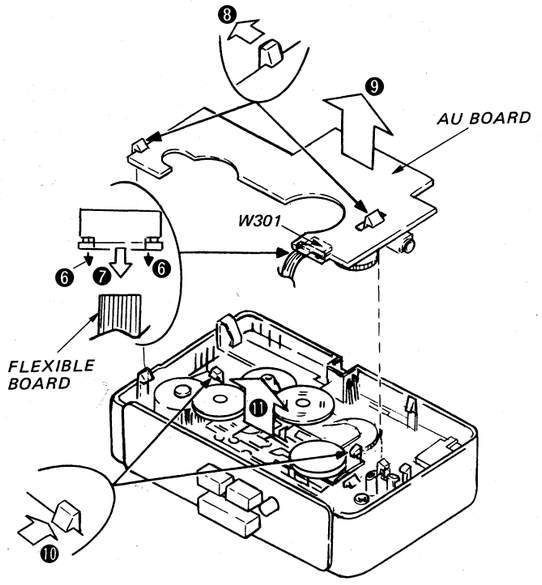
❼ Pull out the flexible board from PB HEAD.

❽ Release the claws.

❾ Remove AU BOARD.

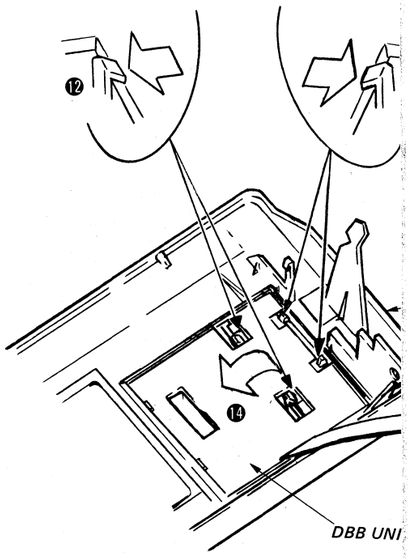
❿ (MECHA DECK) Release the claws.

⓫ Lift MECHA DECK up.



4. DBB UNIT REMOVAL

- ⓬ , ⓭ Release the claws.
- ⓮ Lift DBB UNIT up.



SECTION 3
MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denaturedalcoholmoistened swab:
   playback head — pinch roller
   capstan — rubber belts
2. Demagnetize the playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage (2.5V) unless otherwise noted.

Torque Measurement

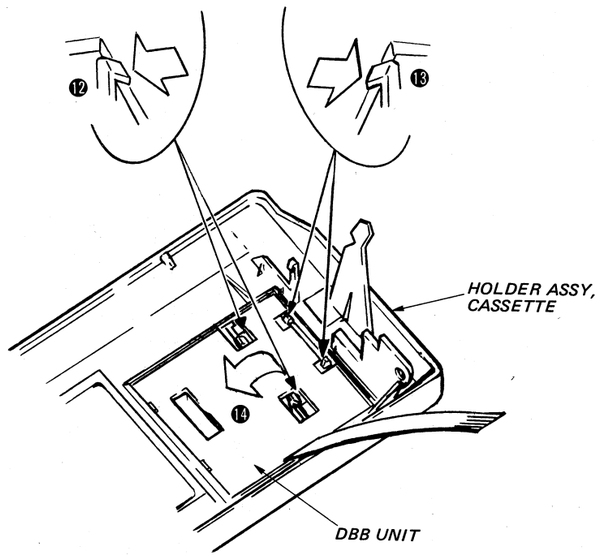
Mode	Torque met
FWD	CQ-102C
FWD Back Tension	
REV	CQ-102R
REV Back Tension	
FF, REW	CQ-201B

Tape Tension Measurement

Mode	Torque me
FWD	CQ-403A
REW	CQ-403R

IT REMOVAL

Release the claws.
DBB UNIT up.



SECTION 3
MECHANICAL ADJUSTMENTS

PRECAUTION

following parts with a denaturedalcoholmoistened

k head — pinch roller
rubber belts

ze the playback head with a head demagnetizer.

a magnetized screwdriver for the adjustments.

adjustments, apply suitable locking compound to djusted.

ments should be performed with the rated power age (2.5V) unless otherwise noted.

Torque Measurement

Mode	Torque meter	Meter reading
FWD	CQ-102C	22 – 55 g•cm (0.30 – 0.76 oz•inch)
FWD Back Tension		less than 3 g•cm (less than 0.04 oz•inch)
REV	CQ-102RB	22 – 55 g•cm (0.30 – 0.76 oz•inch)
REV Back Tension		less than 3 g•cm (less than 0.04 oz•inch)
FF, REW	CQ-201B	more than 60 g•cm (more than 0.83 oz•inch)

Tape Tension Measurement

Mode	Torque meter	Meter reading
FWD	CQ-403A	more than 55 g•cm (more than 0.76 oz•inch)
REW	CQ-403R	

SECTION 4
ELECTRICAL ADJUSTMENTS

CASSETTE SECTION

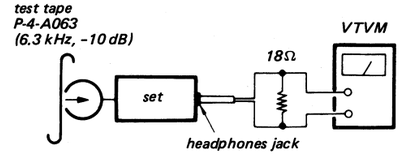
Playback Head Azimuth Check

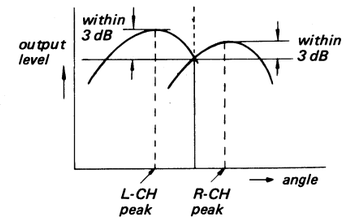
- **Perform this check both in FWD and REV mode.**

Note: This set is not featured the head azimuth adjustment.
When replacing the head, check the both L-ch and R-ch output levels and also those phases.

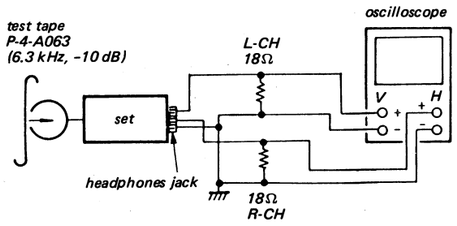
Procedure:

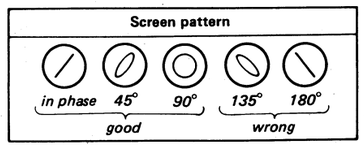
1. Level Check
   Mode: playback





2. Phase Check
   Mode: playback

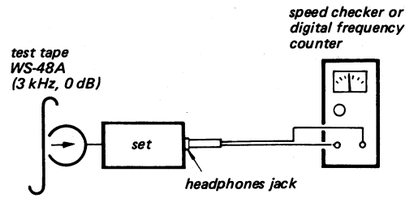




Tape Speed Adjustment

Procedure:

Mode: playback

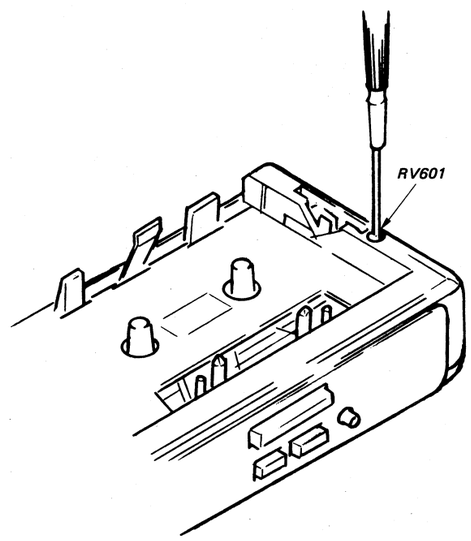


Specification:

speed checker	digital frequency counter
±1%	2,970 – 3,030 Hz

Frequency difference between the beginning and the end of the tape should be within ±2.5% (±75 Hz).

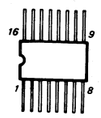
Adjustment Location:



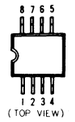
SECTION 5
DIAGRAMS

5-1. Semiconductor Lead Layouts

NJM2063AM

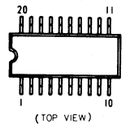


AN6612S

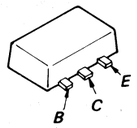


2SC1623

LA4580M



2SB798

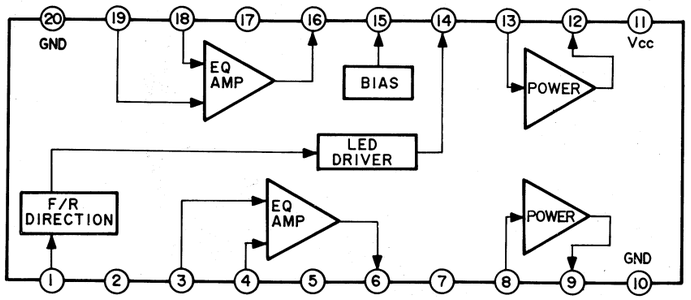


● **Semiconductor Location**

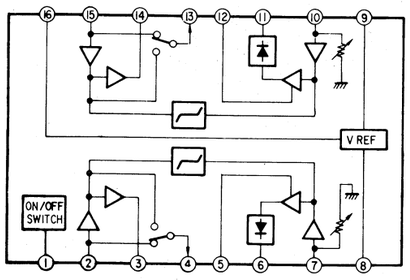
Ref. No.	Location
IC301	G-11
IC302	E-8
IC601	D-5
Q301	D-5
Q601	E-5

IC BLOCK DIAGRAMS

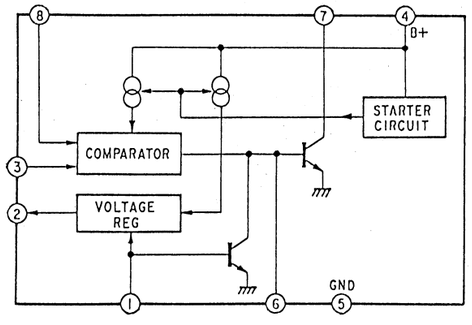
LA4580M



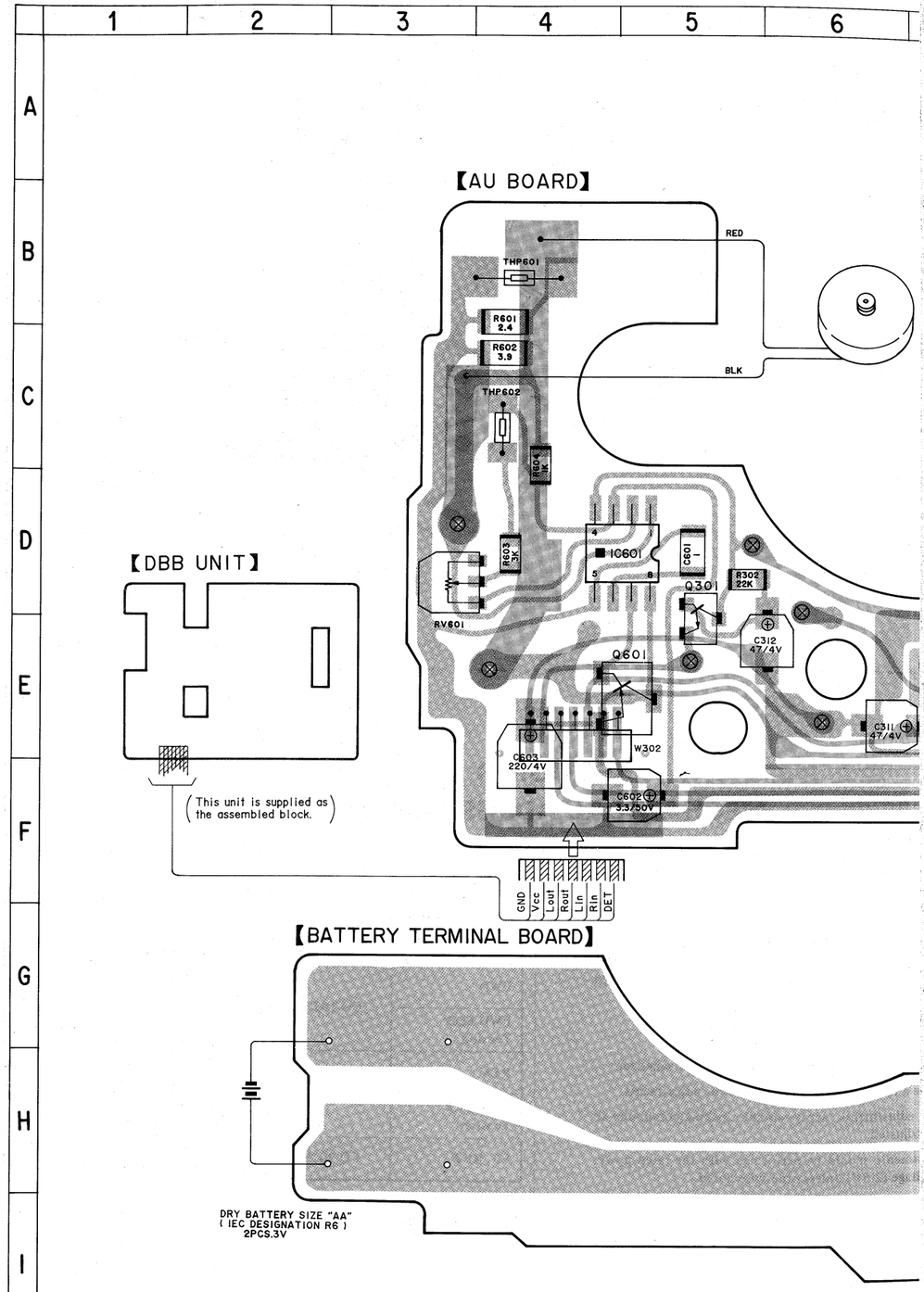
NJM-2063AM



AN6612S



5-2. PRINTED WIRING BOARDS

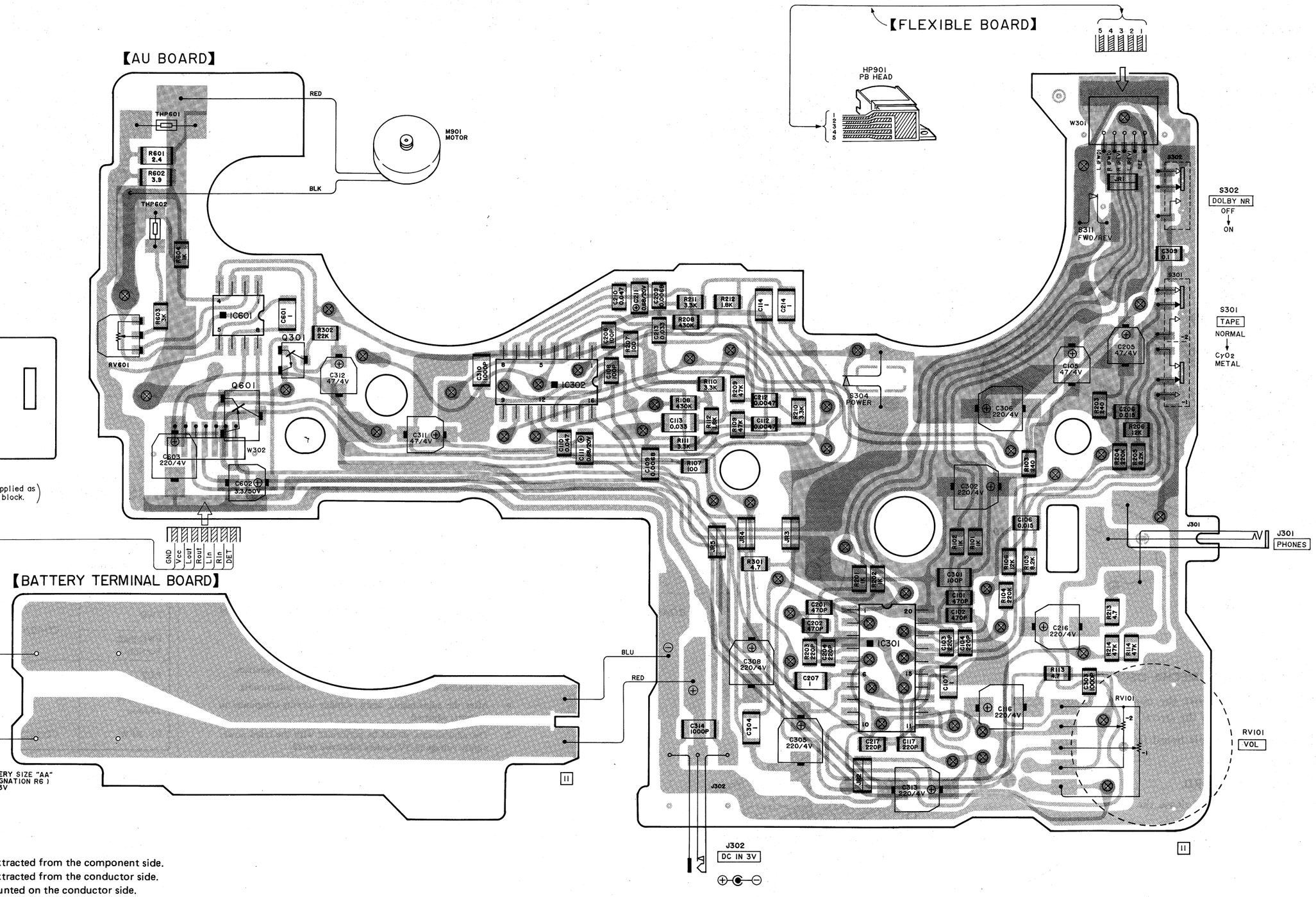


Note:

- ○—— : parts extracted from the component side.
- ●—— : parts extracted from the conductor side.
- ■ : parts mounted on the conductor side.
- ⊗ : Through hole.
- ▒▒ : Pattern on the side which is seen.
- ▒▒ : Pattern of the rear side.

RDS

	3	4	5	6	7	8	9	10	11	12	13	14	15

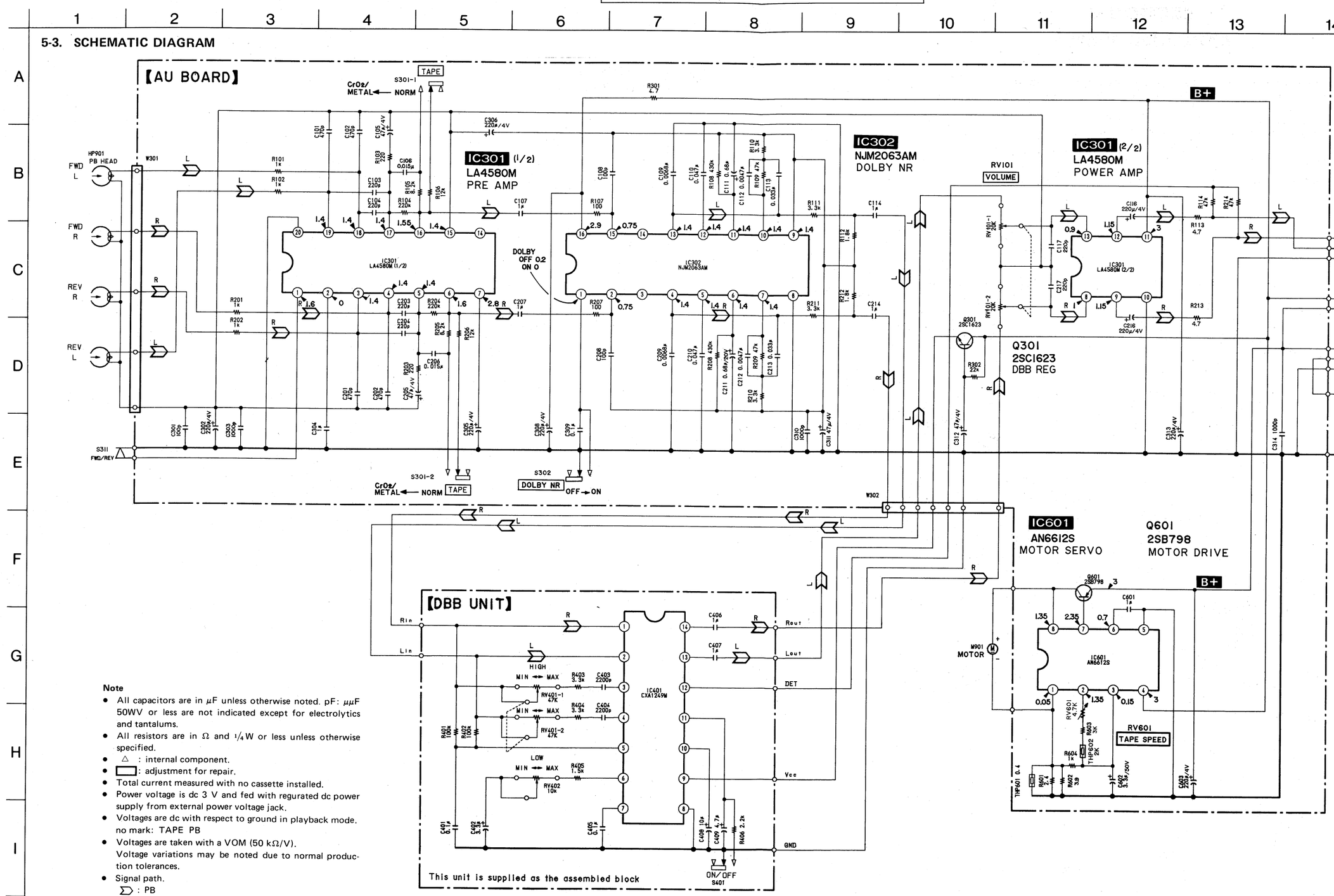


pplied as
block.)

ERY SIZE "AA"
GNATION R6)
3V

ttracted from the component side.
ttracted from the conductor side.
unted on the conductor side.
hole.
n the side which is seen.
of the rear side.

5-3. SCHEMATIC DIAGRAM



Note

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- ▭ : adjustment for repair.
- Total current measured with no cassette installed.
- Power voltage is dc 3 V and fed with regurated dc power supply from external power voltage jack.
- Voltages are dc with respect to ground in playback mode. no mark: TAPE PB
- Voltages are taken with a VOM (50 kΩ/V). Voltage variations may be noted due to normal production tolerances.
- Signal path. Σ : PB
- Switches:

Ref. No.	Switch	Position
S301	TAPE	NORM
S302	DOLBY NR	OFF
S304	(POWER)	OFF
S311	(FWD/REV)	OFF

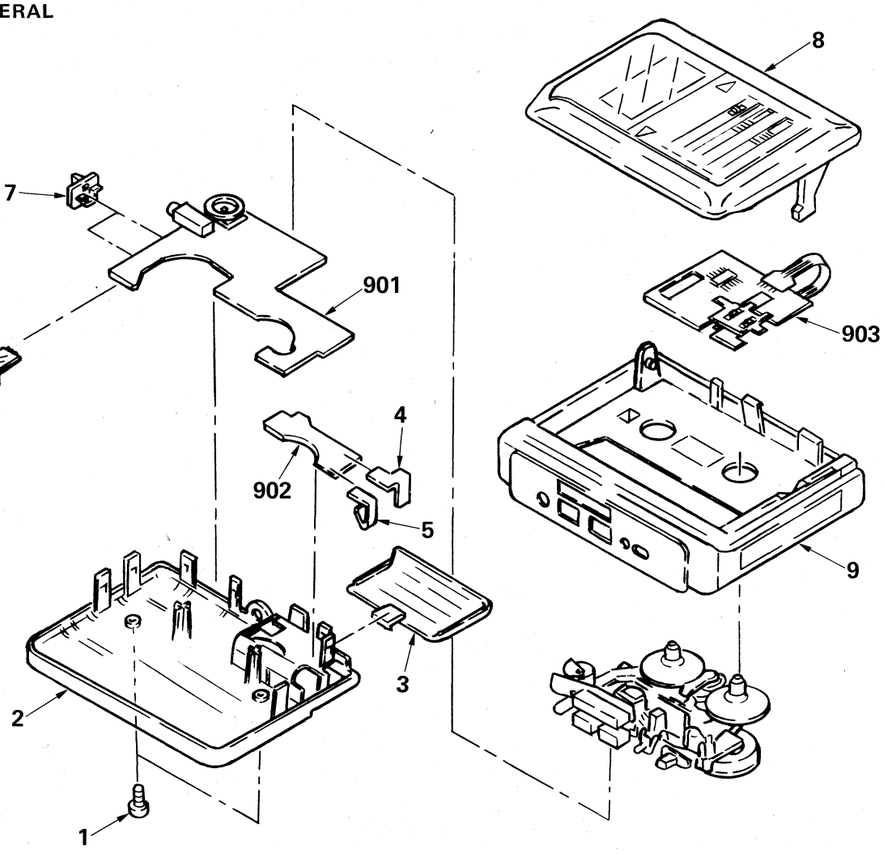
WM-A39/B39

SECTION 6
EXPLODED VIEWS

NOTE:

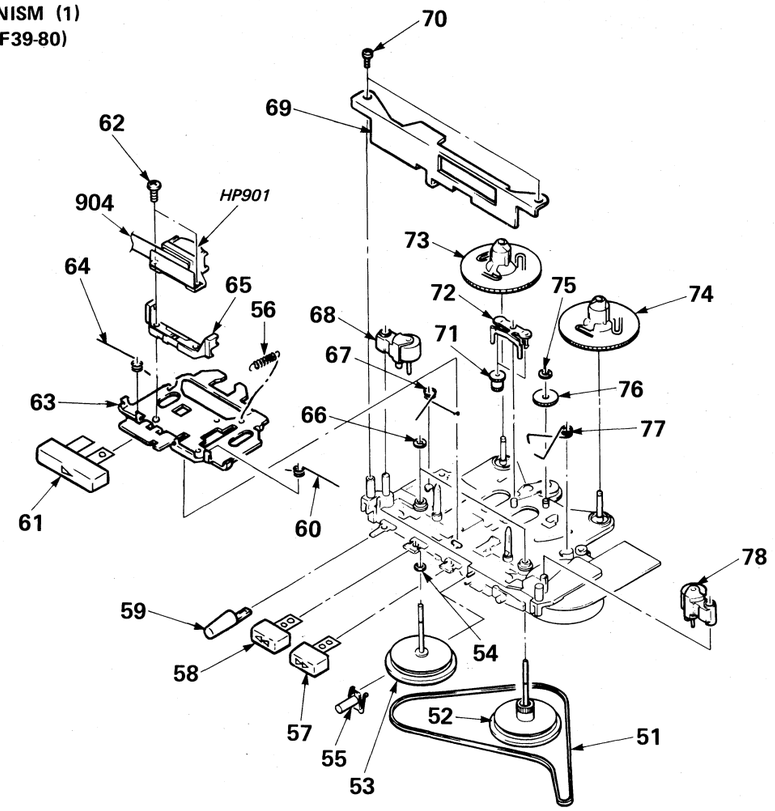
- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ ↑
  Cabinet's Color Parts Color

6-1. GENERAL



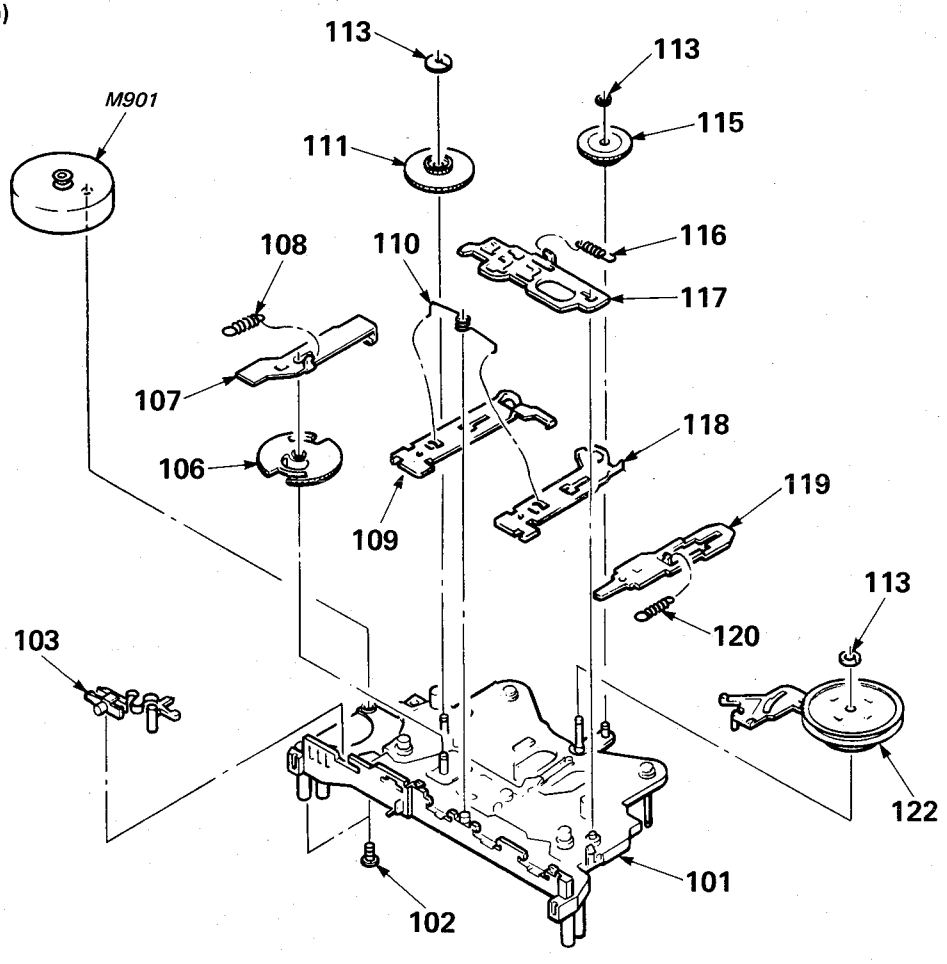
No.	Part No.	Description	Remarks
1	7-685-106-19	SCREW +P 2X10 TYPE2 NON-SLIT	
2	X-3346-508-1	(WM-A39).....CABINET (REAR)(TC)(B) ASSY	
	X-3346-509-1	(WM-B39:AEP)...CABINET (REAR)(TC)(R) ASSY	
	X-3346-510-1	(WM-B39:AEP)...CABINET (REAR)(TC)(L) ASSY	
3	3-346-585-01	(WM-A39).....LID (B), BATTERY CASE	
	3-346-585-11	(WM-B39)...LID, BATTERY CASE	
	3-346-585-21	(WM-B39)...LID (L), BATTERY CASE	
4	3-346-589-01	TERMINAL (PLUS), BATTERY	
5	3-346-590-01	TERMINAL (MINUS), BATTERY	
6	*3-346-714-01	PLATE (HD), SHIELD	
7	3-346-592-01	KNOB (SW)	
8	X-3346-520-1	(WM-A39)...HOLDER (TC)(A-B) ASSY, CASSETTE	
	X-3346-521-1	(WM-B39:AEP) ...HOLDER (TC)(DL) ASSY, CASSETTE	
	X-3346-522-1	(WM-B39:AEP,UK) ...HOLDER (TC)(B-B) ASSY, CASSETTE	
	X-3346-523-1	(WM-B39:AEP) ...HOLDER (TC)(B-R) ASSY, CASSETTE	
	X-3346-524-1	(WM-B39:AEP) ...HOLDER (TC)(B-L) ASSY, CASSETTE	
9	X-3346-506-1	CABINET (FRONT) (TC) ASSY	
901	A-3070-239-A	MOUNTED PCB, AU	
902	1-626-494-11	PC BOARD, BATTERY TERMINAL	
903	1-464-956-11	DBB UNIT	

6-2. MECHANISM (1) (MF-WMF39-80)



No.	Part No.	Description	Remarks
51	3-341-267-01	BELT, CAPSTAN	
52	X-3335-635-1	FLYWHEEL (T) ASSY	
53	X-3335-636-1	FLYWHEEL ASSY	
54	3-701-437-11	WASHER (242T), TEFLON	
55	3-341-294-01	BUTTON (DIR)	
56	3-341-271-01	SPRING, TENSION	
57	3-346-587-01	BUTTON (F)	
58	3-346-588-01	BUTTON (R)	
59	3-341-961-01	BUTTON (S)	
60	3-341-276-11	SPRING (N)	
61	3-346-586-01	BUTTON (P)	
62	3-704-252-21	SCREW (M 1.4 X 3.8)	
63	3-341-711-01	LEVER, PLAY	
64	3-341-277-11	SPRING (R)	
65	3-341-702-01	GUIDE, TAPE	
66	3-321-483-11	RING, RETAINING	
67	3-341-270-01	SPRING (R)	
68	X-3335-624-1	PINCH LEVER (R) ASSY	
69	3-341-762-01	HOLDER, S	
70	3-893-942-21	SCREW (1.7 X 5), TAPPING (B)	
71	3-341-275-01	GEAR, FR	
72	3-341-701-01	LEVER, FR	
73	3-341-291-01	GEAR, S REEL	
74	3-341-290-01	GEAR, T REEL	
75	3-341-752-01	WASHER, POLYETHYLENE (t=0.13)	
	3-341-752-11	WASHER, POLYETHYLENE (t=0.25)	
76	3-341-265-01	GEAR, R	
77	3-341-763-01	SPRING	
78	X-3335-623-1	PINCH LEVER (N) ASSY	
HP901	1-543-524-11	HEAD, MAGNETIC (PLAY BACK)	
904	1-623-643-11	PC BOARD, HEAD FLEXIBLE	

6-3. MECHANISM (2)
(MF-WMF39-80)



No.	Part No.	Description	Remarks
101	A-3163-146-A	CHASSIS ASSY	
102	3-335-797-31	SCREW (M 1.4 X 3), TOOTHED LOCK	
103	3-341-293-01	LEVER, MODE	
106	3-341-292-01	GEAR, CAM	
107	3-341-299-01	LEVER, DIR	
108	3-341-274-01	SPRING (POWER TENSION), TENSION	
109	3-341-295-01	LEVER, FF	
110	3-341-268-01	SPRING	
111	3-341-289-01	GEAR, DECELERATION	

No.	Part No.	Description	Remarks
113	3-341-753-01	WASHER, POLYETHYLENE (t=0.13)	
	3-341-753-11	WASHER, POLYETHYLENE (t=0.25)	
115	3-341-266-01	GEAR, T	
116	3-341-272-01	SPRING, TENSION	
117	3-341-298-01	PLATE, LOCK	
118	3-341-296-01	LEVER, REW	
119	3-341-297-01	LEVER, STOP	
120	3-341-273-01	SPRING, TENSION	
122	A-3239-894-A	WHEEL ASSY, MIDWAY	
M901	A-3133-336-A	MOTOR BLOCK, ASSY	

SECTION 7
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

Ref.No.	Part No.	Description		
901	A-3070-239-A	MOUNTED PCB, AU		
902	1-626-494-11	PC BOARD, BATTERY TERMINAL		
903	1-464-956-11	DBB UNIT		
904	1-623-643-11	PC BOARD, HEAD FLEXIBLE		
C101	1-163-133-00	CERAMIC CHIP 470PF	10%	50V
C102	1-163-133-00	CERAMIC CHIP 470PF	10%	50V
C103	1-163-125-00	CERAMIC CHIP 220PF	10%	50V
C104	1-163-125-00	CERAMIC CHIP 220PF	10%	50V
C105	1-126-208-11	CAP,ELECT 47MF	20%	4V
C106	1-163-023-00	CERAMIC CHIP 0.015MF	5%	50V
C107	1-162-638-11	CERAMIC CHIP 1MF		16V
C108	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C109	1-163-057-00	CERAMIC CHIP 0.0068MF	10%	50V
C110	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C111	1-135-087-21	TANTAL. CHIP 0.68MF	10%	20V
C112	1-163-017-00	CERAMIC CHIP 0.0047MF	5%	50V
C113	1-163-078-11	CERAMIC CHIP 0.033MF	5%	25V
C114	1-162-638-11	CERAMIC CHIP 1MF		16V
C116	1-126-210-11	CAP,ELECT 220MF	20%	4V
C117	1-163-125-00	CERAMIC CHIP 220PF	10%	50V
C201	1-163-133-00	CERAMIC CHIP 470PF	10%	50V
C202	1-163-133-00	CERAMIC CHIP 470PF	10%	50V
C203	1-163-125-00	CERAMIC CHIP 220PF	10%	50V
C204	1-163-125-00	CERAMIC CHIP 220PF	10%	50V
C205	1-126-208-11	CAP,ELECT 47MF	20%	4V
C206	1-163-023-00	CERAMIC CHIP 0.015MF	5%	50V
C207	1-162-638-11	CERAMIC CHIP 1MF		16V
C208	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C209	1-163-019-00	CERAMIC CHIP 0.0068MF	10%	50V
C210	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C211	1-135-087-21	TANTAL. CHIP 0.68MF	10%	20V
C212	1-163-017-00	CERAMIC CHIP 0.0047MF	5%	50V
C213	1-163-034-00	CERAMIC CHIP 0.033MF	5%	25V
C214	1-162-638-11	CERAMIC CHIP 1MF		16V
C216	1-126-210-11	CAP,ELECT 220MF	20%	4V
C217	1-163-125-00	CERAMIC CHIP 220PF	10%	50V
C301	1-163-181-00	CERAMIC CHIP 100PF	10%	50V
C302	1-126-210-11	CAP,ELECT 220MF	20%	4V
C303	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C304	1-162-638-11	CERAMIC CHIP 1MF		16V
C305	1-126-210-11	CAP,ELECT 220MF	20%	4V
C306	1-126-210-11	CAP,ELECT 220MF	20%	4V
C308	1-126-210-11	CAP,ELECT 220MF	20%	4V
C309	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C310	1-163-205-00	CERAMIC CHIP 0.001MF	10%	50V
C311	1-126-208-11	CAP,ELECT 47MF	20%	4V

Ref.No.	Part No.	Description			
C312	1-126-208-11	CAP,ELECT 47MF		20%	4V
C313	1-126-210-11	CAP,ELECT 220MF		20%	4V
C314	1-163-205-00	CERAMIC CHIP 0.001MF		10%	50V
C601	1-162-638-11	CERAMIC CHIP 1MF			16V
C602	1-126-196-11	CAP,ELECT 3.3MF		20%	50V
C603	1-126-210-11	CAP,ELECT 220MF		20%	4V
IC301	8-759-820-66	IC LA4580M			
IC302	8-759-701-07	IC NJM2063AM			
IC601	8-759-400-12	IC AN6612S			
J301	1-566-800-11	JACK (PHONES)			
J302	1-565-371-11	JACK, OUTER POWER			
JR1	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR2	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR3	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR4	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR5	1-216-296-00	METAL GLAZE	0	5%	1/8W
Q301	8-729-100-66	TRANSISTOR 2SC1623			
Q601	8-729-101-07	TRANSISTOR 2SB798			
R101	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R102	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R103	1-216-034-00	METAL GLAZE	240	5%	1/10W
R104	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R105	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W
R106	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R107	1-216-025-00	METAL GLAZE	100	5%	1/10W
R108	1-216-112-00	METAL GLAZE	430K	5%	1/10W
R109	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R110	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R111	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R112	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W
R113	1-216-308-00	METAL GLAZE	4.7	5%	1/10W
R114	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R201	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R202	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R203	1-216-034-00	METAL GLAZE	240	5%	1/10W
R204	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R205	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W
R206	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R207	1-216-025-00	METAL GLAZE	100	5%	1/10W
R208	1-216-112-00	METAL GLAZE	430K	5%	1/10W
R209	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R210	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R211	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R212	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W
R213	1-216-308-00	METAL GLAZE	4.7	5%	1/10W

Ref.No.	Part No.	Description			
R214	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R301	1-216-308-00	METAL GLAZE	4.7	5%	1/10W
R302	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R601	1-216-135-00	METAL GLAZE	2.4	5%	1/8W
R602	1-216-140-00	METAL GLAZE	3.9	5%	1/8W
R603	1-216-060-00	METAL GLAZE	3K	5%	1/10W
R604	1-216-049-00	METAL GLAZE	1K	5%	1/10W
RV101	1-238-161-11	RES, VAR (VOL)			
RV601	1-238-181-11	RES, ADJ, CERMET 4.7K (TAPE SPEED)			
S301	1-571-277-22	SWITCH, SLIDE (TAPE)			
S302	1-571-275-21	SWITCH, SLIDE (DOLBY NR)			
S304	1-571-518-11	SWITCH, LEAF (POWER)			
S311	1-571-519-11	SWITCH, LEAF (FWD/REV)			
THP601	1-808-389-11	THERMISTOR, POSITIVE			
THP602	1-808-388-11	THERMISTOR, POSITIVE			
W301	*1-565-370-11	HOUSING, CONNECTOR			
W302	*1-565-380-11	HOUSING, CONNECTOR			

ACCESSORY & PACKING MATERIAL

3-346-518-01 CLIP, BELT

*3-346-561-01 (WM-A39).....CUSHION (FRONT)
*3-346-565-01 (WM-B39:AEP,UK)...CUSHION (FRONT)

*3-346-562-01 (WM-A39).....CUSHION (REAR)
*3-346-566-01 (WM-B39:AEP,UK)...CUSHION (REAR)

*3-346-567-01 (WM-B39:AEP,UK)...INDIVIDUAL CARTON

3-786-017-21 (WM-A39).....MANUAL, INSTRUCTION
3-786-017-41 (WM-B39:AEP,UK)...MANUAL, INSTRUCTION

8-952-260-91 HEADPHONE MDR-W10L/B SET